ABSTRACT OF THE INVENTION

A optical fiber, for example a Dispersion Compensation (DC) fiber, for compensating dispersion of a transmission fiber (such as a NZDSF) and transmission line including same. The fiber has a refractive index profile having a first moat with a negative delta ($\Delta 2$), and a second moat with a negative delta ($\Delta 4$) wherein the fiber exhibits a negative total dispersion at 1550 nm, and kappa at 1550 nm of less than 75 nm. The DC fiber, when used in a transmission line, may provide low residual dispersion across the C band when such lines include transmission fibers with total dispersion between 2 and 6 ps/nm/km and dispersion slope less than 0.092 ps/nm^2/km at 1550 nm.